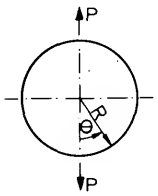
Table 27.2 Circular Rings Loaded in Plane

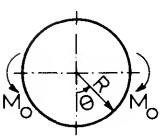


$u = \frac{PR^3}{EI} K_u$

$\psi = \frac{PR^2}{EI} K_\psi$

$M = PR K_M$

Symbol	Function	Range of Application
K_u	$0.2500 \sin\theta + (0.3927 - 0.2500\,\theta)\cos\theta - 0.3183$	$0 - \pi$
K_ψ	$(0.2500\,\theta - 0.3927)\sin\theta$	$0 - \pi$
K_M	$0.5000 \sin\theta - 0.3183$	$0 - \pi$

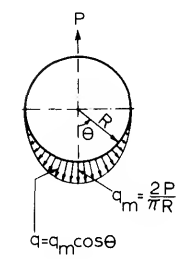


$u = \frac{M_O R^2}{EI} K_u$

$\psi = \frac{M_O R}{EI} K_\psi$

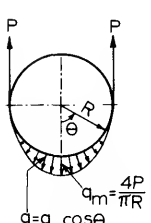
$M = M_O K_M$

Symbol	Function	Range of Application
K_u	$0.5000 - 0.3183\,\theta \sin\theta - 0.4775 \cos\theta$	$0 - \pi/2$
K_ψ	$0.1592 \sin\theta - 0.3183\,\theta \cos\theta$	$0 - \pi/2$
K_M	$0.5000 - 0.6366 \cos\theta$	$0 - \pi/2$
	$-0.5000 - 0.6366 \cos\theta$	$\pi/2 - \pi$



$u = \frac{PR^3}{EI} K_u$ $\psi = \frac{PR^2}{EI} K_\psi$ $M = PR K_M$

Symbol	Function	Range of Application
K_u	$0.1989\,\theta \sin\theta + (0.4081 - 0.0796\,\theta^2)\cos\theta - 0.3618$	$0 - \pi/2$
	$(0.3750 - 0.0398\,\theta)\sin\theta + (0.3658 - 0.2500\,\theta)\cos\theta - 0.3618$	$\pi/2 - \pi$
K_ψ	$(0.0796\,\theta^2 - 0.2092)\sin\theta + 0.0398\,\theta\cos\theta$	$0 - \pi/2$
	$(0.2500\,\theta - 0.4055)\sin\theta + (0.1250 - 0.0398\,\theta)\cos\theta$	$\pi/2 - \pi$
K_M	$0.3183\,\theta \sin\theta + 0.2387 \cos\theta - 0.3618$	$0 - \pi/2$
	$0.5000 \sin\theta - 0.0796 \cos\theta - 0.3618$	$\pi/2 - \pi$



$u = \frac{PR^3}{EI} K_u$

$\psi = \frac{PR^2}{EI} K_\psi$

$M = PR K_M$

Symbol	Function	Range of Application
K_u	$0.5570\,\theta \sin\theta + (0.9382 - 0.1592\,\theta^2)\cos\theta - 0.9053$	$0 - \pi/2$
	$(0.0796\,\theta - 0.2500)\sin\theta + 0.0681\cos\theta + 0.0947$	$\pi/2 - \pi$
K_ψ	$(0.1592\,\theta^2 - 0.3812)\sin\theta + 0.2387\,\theta\cos\theta$	$0 - \pi/2$
	$0.0115 \sin\theta + (0.0796\,\theta - 0.2500)\cos\theta$	$\pi/2 - \pi$
K_M	$0.6366\,\theta \sin\theta + 0.7958 \cos\theta - 0.9053$	$0 - \pi/2$
	$0.1592 \cos\theta + 0.0947$	$\pi/2 - \pi$